Department of Environmental Services (DES) Drinking Water Program

Analytical Requirements for Community Public Water Systems

May 3, 2004

The parameters listed in the table below must be analyzed and reported to DES. The water system is responsible for sample collections, reporting, and ensuring that the correct analytical methods are used. Contact DES at (603) 271-3303 with questions and for the most recent guidance.
The laboratory must:

1. Use EPA approved drinking water methods
2. Have current drinking water certification and /or accredited for analyses
3. Identify all subcontracted analyses, laboratories and their certification or accreditation
4. Comply with Env-Ws 322.11, **"Reporting Data from Commercial or Other Laboratories"**.

Parameter	Group	SDWIS contaminant ID#	MCL (mg/l)	Trigger (mg/l)	Source	Health Effects---at levels above the MCL
E. Coli	Bio		Absent		Human & animal fecal waste	May cause gastro-intestinal illness
Fecal Coliform	Bio		Absent		Human & animal fecal waste	May cause gastro-intestinal illness
Total Coliform	Bio		Absent		Naturally present in the environment	None, indicates possible presence of other bacteria
Total Alkalinity	IOCU	1927	n.e.		Naturally present in the environment	
Asbestos [h] (fiber>10 micrometers)	IOC	1094	7 million fibers per liter (MFL)	If Detected	Decay of asbestos cement in water mains; erosion of natural deposits	Increased risk of developing benign intestinal polyps
Specific Conductance	IOC	1064	n.e.			
Arsenic [i]	IOC	1005	0.01[i]	0.005	Geological; pesticide residue, industrial waste	Skin damage, circulatory system problems, carcinogen
Aluminum[d]	IOC	1002	0.05[d]	0.05		
Barium	IOC	1010	2.0	1.0	Geological; oil/gas drilling, painting, industrial waste	Muscular weakness, increase in blood pressure
Cadmium	IOC	1015	0.005	0.0025	Geological; mining, smelting, metal finishing; runoff from waste batteries and paints	Kidney damage
Chloride[d]	IOC	1017	250[d]	250	Wastewater, road salt, water softeners, corrosion	None, aesthetic
Chromium	IOC	1020	0.1	0.05	Used in electroplating, steel proc, synthetic fibers; erosion of natural deposits	Allergic dermatitis
Copper[c]	IOC	1022	90% of trigger	1.3	Corrosion of household plumbing; erosion of natural deposits	Gastrointestinal distress; liver or kidney damage
Cyanide (as free C)	IOC	1024	0.2	0.1	Used in electroplating, steel proc, plastics, synthetic fibers	Neurological, thyroid
Fluoride [a] Fluoride [d]	IOC IOC	1025 1025	4.0 [a] 2.0 [d]	2.0 2.0	Geological; additive to drinking water, toothpaste	Skeletal damage

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Iron[d]	IOC	1028	0.3[d]	0.3	Geological	None, aesthetic
Lead[c]	IOC	1030	90% of trigger	0.015	Corrosion of household plumbing; erosion of natural deposits	Delays in physical or mental development in infants and children
Manganese[d]	IOC	1032	0.05[d]	0.05	Geological	None, aesthetic
Mercury	IOC	1035	0.002	0.001	Geological; used in mfg. of paint, paper, fungicides	Nervous system disorders, kidney
Nickel	IOC	1036	0.1	0.05	Geological; electroplating, battery production, ceramics	Heart, liver, skin, weight loss
Nitrate (as N)	IOC	1040	10.0	5	Geological; fertilizer, sewage, feedlots	Methemoglobinemia, “Blue Baby Syndrome”
Nitrite (as N)	IOC	1041	1.0	.5	Geological; fertilizer, sewage, feedlots	Methemoglobinemia, “Blue Baby Syndrome”
Selenium	IOC	1045	0.05	0.025	Geological; by-product of copper mining/smelting	Numbness in fingers or toes; circulatory problems, hair or fingernail loss
Silver[d]	IOC	1050	0.10[d]	0.10		
Sodium[d]	IOC	1052	100-250[d]	250	Road salt, septic system (salt from softeners)	Aesthetic, except high blood pressure and/or heart disease
Sulfate[d]	IOCU	1055	250[d]	250	Naturally occurring	Diarrhea
Sulfide[d]	IOC	n.e.	0.05[d]	0.05		
Antimony	IOC	1074	0.006	0.003	Geological; flame retardants, ceramics, pesticides	Increase in blood cholesterol; decrease in blood sugar
Beryllium	IOC	1075	0.004	0.002	Geological; used in high thermal conductivity materials	Intestinal lesions
Thallium	IOC	1085	0.002	0.001	Geological; electronics industry, alloys and glass mfg	Kidney, liver, or intestinal lesions; blood chemistry; hair loss
Zinc[d]	IOC	1095	5[d]	5	Galvanized pipes	Possible presence of other health related heavy metals
Tot. Hard.($CaC0_3$) [d]	IOC	1915	n.e.		Naturally occurring	
Calcium Hardness [d]	IOC	1918	n.e.		Naturally occurring	
pH[d]	IOC	1925	6.5-8.5[d]	8.5	Precipitation and geology	None, aesthetic
Uranium (Mass)	Rad	4006	30 ug/L		Decay of natural and man-made materials	Increased risk of cancer; kidney problems
Radium 226 [e]	Rad	4020	n.e.		Erosion of natural deposits	
Radium 228 [e]	Rad	4030	n.e.		Erosion of natural deposits	
Radium 226 & 228 (Combined)	Rad	4010	5 piC/l	If Detected	Erosion of natural deposits	Increased risk of cancer

Parameter	Group	SDWIS contaminant ID#	MCL (mg/l)	Trigger (mg/l)	Source	Health Effects---at levels above the MCL
Analytical Gross Alpha[e]	Rad	4002	n.e.		Erosion of natural deposits and radioactive materials decay of natural and non-made materials	
Compliance Gross Alpha	Rad	4000	15 piC/l	If Detected	Erosion of natural deposits and radioactive materials decay of natural and non-made materials	Increased risk of cancer
Beta Particles[j]	Rad	4100	4 mrem/yr	If Detected	Decay of natural and man-made deposits	Increased risk of Cancer
Endrin	SOC	2005	0.002	If Detected	Banned Pesticide	Liver problems
Lindane	SOC	2010	0.0002	If Detected	Insecticide used on seed, lumber, livestock, restricted 1983	Liver or kidney problems
Methoxychlor (DMDT, Martate)	SOC	2015	0.04	If Detected	Insecticide used on fruit trees, vegetables, livestock	Reproductive difficulties
Toxaphene	SOC	2020	0.003	If Detected	Insecticide used on cotton and cattle; prohibited in 1982	Liver or kidney problems; increased risk of cancer
Dalapon [h]	SOC	2031	0.2[h]	If Detected	Herbicide	Kidney problems
Diquat[h]	SOC	2032	0.02[h]	0.02	Herbicide	Cataracts
Endothall[h]	SOC	2033	0.1[h]	0.1	Herbicide	Stomach intestinal problems
Glyphosate	SOC	2034	0.7	If Detected	Herbicide	Kidney problems; reproductive difficulties
Di(2-ethylhexyl)adipate	SOC	2035	0.4	If Detected	Plastics	General toxic effects or reproductive difficulties
Oxamyl (Vydate)	SOC	2036	0.2	If Detected	Insecticide used on apples, potatoes, & tomatoes.	Slight nervous system effects
Simazine	SOC	2037	0.004	If Detected	Herbicide	Blood problems
Di(2-ethylhexyl)phthalate	SOC	2039	0.006	If Detected	Plastics	Liver and reproductive problems; increased risk of cancer
Picloram	SOC	2040	0.5	If Detected	Herbicide	Liver problems
Dinoseb	SOC	2041	0.007	If Detected	Herbicide	Reproductive difficulties
Hexachlorocyclopentadiene	SOC	2042	0.05	If Detected	Waste By-Product in mfg of Chlorinated Pesticides	Kidney or heart problems
Aldicarb sulfoxide	SOC	2043	0.004	If Detected	Degraded from Aldicarb by Plants	Nervous system problems
Aldicarb sulfone (aldoxy carb)	SOC	2044	0.002	If Detected	Degraded from Aldicarb by Plants	Nervous system problems
Carbofuran (Furadon, 4F)	SOC	2046	0.04	If Detected	Soil fumigation, Insecticide on corn, cotton	Nervous system, reproductive, headache, sweating, nausea
Aldicarb (Temik)	SOCU	2047	0.003	If Detected	Insecticide used on cotton, potatoes	Sweating, leg weakness, nausea, nervous system
Atrazine (Atranx, Crisazina)	SOC	2050	0.003	If Detected	Herbicide, weed control	Cardiovascular system or reproductive problems

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Alachlor (Lasso)	SOC	2051	0.002	If Detected	Herbicide used on corn, soybeans	Eyes, liver or spleen problems; anemia; increased risk of cancer
2,3,7,8 TCDD (Dioxin) [h]	SOC	2063	0.00000003[h]	If Detected	Combustion emissions	Reproductive difficulties; increased risk of cancer
Heptachlor	SOC	2065	0.0004	If Detected	Banned insecticide	Liver damage; increased risk of cancer
Heptachlor epoxide	SOC	2067	0.0002	If Detected	Breakdown product of heptachlor	Liver damage; increased risk of cancer
2,4-D	SOC	2105	0.07	If Detected	Herbicide to control broad leaf weeds	Kidney, liver, or adrenal gland problems
2,4,5 TP (Silvex)	SOC	2110	0.05	If Detected	Herbicide (prohibited in 1984)	Liver problems
Hexachlorobenzene	SOC	2274	0.001	If Detected	Fungicide, wood preservatives	Liver or kidney problems; reproductive difficulties; increased risk of cancer
Benzo (a) pyrene (PAHs)	SOC	2306	0.0002	If Detected	Fossil fuel, wood, coal, or tar burning	Reproductive difficulties; increased risk of cancer
Pentachlorophenol	SOC	2326	0.001	If Detected	Wood preservative and herbicide	Liver or kidney problems; increased risk of cancer
Polychlorinated biphenyls (PCB) [h]	SOC	2383	0.0005[h]	If Detected	Waste chemical runoff; old transformer	Skin changes; immune deficiencies; reproductive or nervous system deficiencies; increased risk of cancer
Dibromochloropropane (DBCP) [h]	SOC	2931	0.0002[h]	If Detected	Soil fumigation on soybeans, corn; prohibited in 1977	Liver or kidney problems; increased risk of cancer
Ethylenedibromide (EDB) [h]	SOC	2946	0.00005[h]	If Detected	Gas additive; soil fumigant, solvent, prohibited in 1984	Reproductive, liver, or kidney problems, increased risk of cancer
Chlordane	SOC	2959	0.002	If Detected	Banned Insecticide for termite control	Liver or CNS problems; increased risk of cancer
Methyl tertiary-butyl ether (MtBE) [g] Methyl tertiary-butyl ether (MtBE)[d]	VOC VOC	2251 2251	0.013[g] 0.020[d]	If Detected 0.020	Gasoline additive	Kidney or liver damage; increased risk of cancer
Tertiary amyl methyl ether (TAME) [e] (2-methoxy-2-methylbutane)	VOCU	0003	n.e.		Gasoline additive	
Tertiary butyl alcohol (TBA) [e]	VOCU	0004	n.e.		Gasoline additive	
Ethyl tertiary butyl ether (ETBE) [e]	VOCU	0005	n.e.		Gasoline additive	
Di-isopropyl ether (DIPE)$_e$	VOCU	0006	n.e.		Gasoline additive	
1,2,4-Trichlorobenzene	VOC	2378	0.07	If Detected	Mfg of herbicides, dye carrier	Adrenal gland problems
1,2-Dichloroethylene (cis)	VOC	2380	0.07	If Detected	Industrial extraction solvent	Liver problems
Chloroform[f]	VOCU	2941	n.e.[f]		Disinfection by product	Increased risk of cancer
Bromoform[f]	VOCU	2942	n.e. [f]		Disinfection by product	Increased risk of cancer
Bromodichloromethane[f]	VOCU	2943	n.e. [f]		Disinfection by product	Increased risk of cancer
Chlorodibromomethane[f]	VOCU	2944	n.e. [f]		Disinfection by product	Increased risk of cancer

Parameter	Group	SDWIS contaminant ID#	MCL (mg/l)	Trigger (mg/l)	Source	Health Effects---at levels above the MCL
Xylene (total)	VOC	2955	10.0	If Detected	Paint and Ink solvent: gas refining by-product	Nervous system damage
Dichloromethane (methylene chloride)	VOC	2964	0.005	If Detected	Solvent	Increased risk of cancer; liver problems
1,2 Dichlorobenzene (o)	VOC	2968	0.6	If Detected	Industrial chemicals	Liver, kidney, or circulatory system problems
1,4 Dichlorobenzene (para)	VOC	2969	0.075	If Detected	Used in insecticides, moth balls, air deodorizers	Anemia; liver, kidney, or spleen problems
Vinyl chloride	VOC	2976	0.002	If detected	Leaching from PVC pipes; plastics factory discharge	Increased risk of cancer
1,1-Dichloroethylene	VOC	2977	0.007	If Detected	Industrial extraction solvent	Liver problems
1,2-Dichloroethylene (trans)	VOC	2979	0.1	If Detected	Industrial extraction solvent	Liver problems
1,2 Dichloroethane	VOC	2980	0.005	If Detected	Industrial extraction solvent	Increased risk of cancer
1,1,1-Trichloroethane	VOC	2981	0.200	If Detected	Industrial solvent/degreaser	Nervous system, circulatory, or liver problems
Carbon tetrachloride	VOC	2982	0.005	If Detected	Industrial solvent/degreaser	Liver problems; increased risk of cancer
1,2-Dichloropropane	VOC	2983	0.005	If Detected	Industrial solvent	Increased risk of cancer
Trichloroethylene	VOC	2984	0.005	If Detected	Waste from dry cleaning materials; industrial solvent	Liver problems; increased risk of cancer
1,1,2-Trichloroethane	VOC	2985	0.005	If Detected	Industrial solvent	Kidney, liver, or immune system problems
1,1,1,2-Tetrachoroethane	VOCU	2986	n.e.			
Tetrachloroethylene	VOC	2987	0.005	If Detected	Dry cleaning, industrial solvent	Liver problems; increased risk of cancer
Monochlorobenzene (Chlorobenzene)	VOC	2989	0.1	If Detected	Industrial solvent	Liver or kidney problems
Benzene	VOC	2990	0.005	If Detected	Gas additive; Industrial solvent	Anemia; increased risk of cancer
Toluene	VOC	2991	1.0	If Detected	Gas additive; Industrial solvent	Kidney, nervous system, or liver problems
Ethylbenzene	VOC	2992	0.7	If Detected	Gas additive	Kidney or liver problems
Styrene	VOC	2996	0.1	If Detected	Plastic mfg; resins used in H2O treatment equip	Liver, kidney, or circulatory system problems

Abbreviations:

MCL- The **M**aximum **C**ontaminant **L**evel allowed in drinking water
SDWIS – **S**afe **D**rinking **W**ater **I**nformation **S**ystem
Bio - biological
Rad - radiological parameter
IOC - inorganic parameter/compound
IOCU - inorganic parameter/compound unregulated

SOC - synthetic organic compound
SOCU - synthetic organic compound unregulated
VOC - volatile organic compound
VOCU - volatile organic compound unregulated
n.e. - not established-reporting is required

Footnotes:

[a]Fluoride has a secondary MCL of 2.0 mg/L, and a primary MCL of 4.0 mg/L
[b]pH is expressed in units of hydrogen ion activity
[c]Lead and Copper samples are collected in tap water samples throughout the distribution system
[d]Aesthetic Regulated Secondary MCLs
[e]Recommended additional reporting parameters
[f] Total MCLs combined equals 0.100 mg/L
[g] MtBE has a secondary MCL of 0.020 mg/L and a primary MCL of 0.013 mg/L
[h] State waiver in place-sampling required for initial water quality testing only
[i] The Arsenic MCL of 0.01 mg/L became effective on January 22, 2004. Systems in existence prior to that date are required to meet this MCL by January 22, 2006. Systems that became operational between January 22, 2004 and January 22, 2006 must meet the 0.01 mg/L MCL at the time of operational approval.
[j] Beta particle testing required only for systems deemed vulnerable by the Department and notified that testing is mandatory.

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